The Acquisition Process

and the

"Road To CEC OPEVAL"

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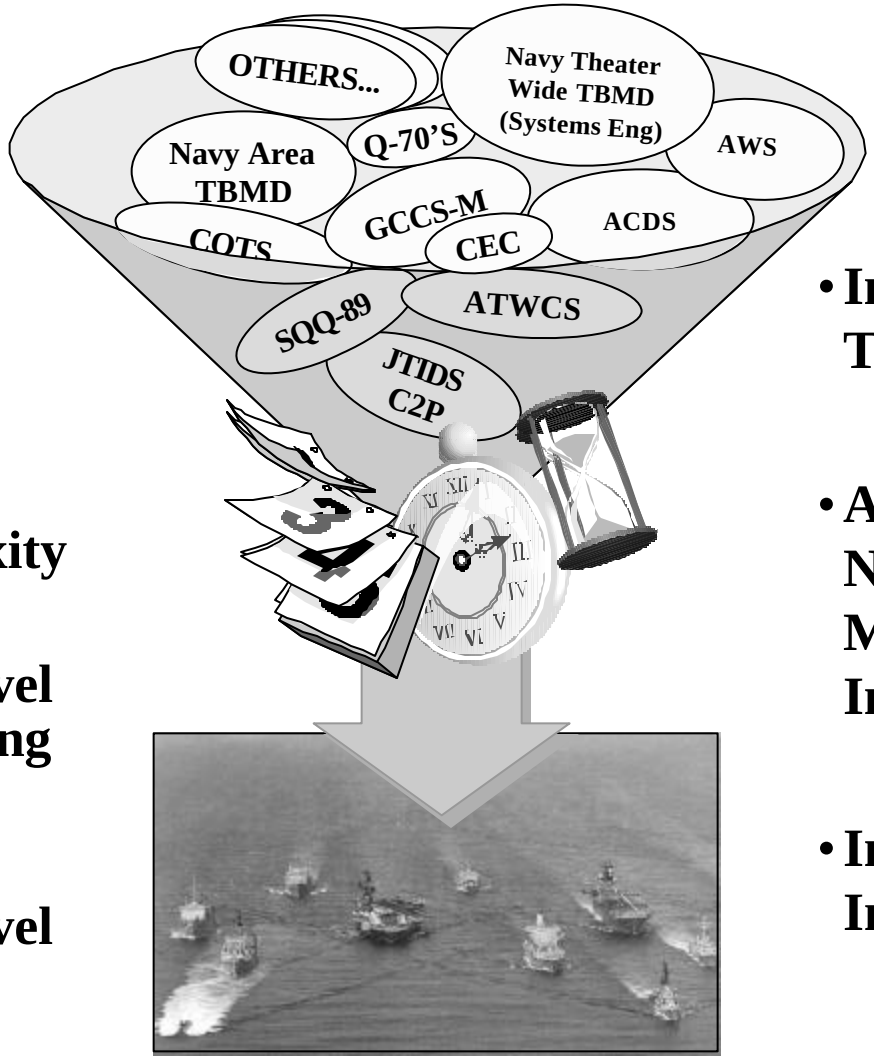
WHAT BROUGHT US HERE?

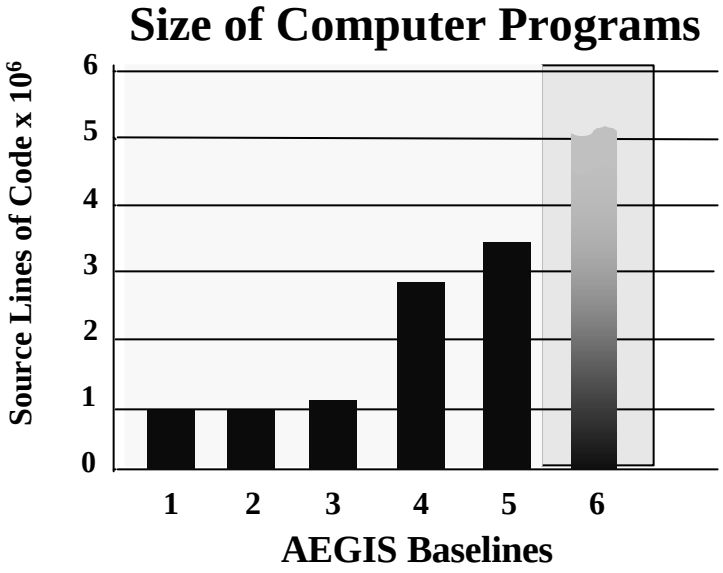
- **Legacy Systems**
- **Overaggressive Schedules**
- **Size and Complexity**
- **Lack of Force Level System Engineering Process**
- **Lack of Force Level Performance Validation**

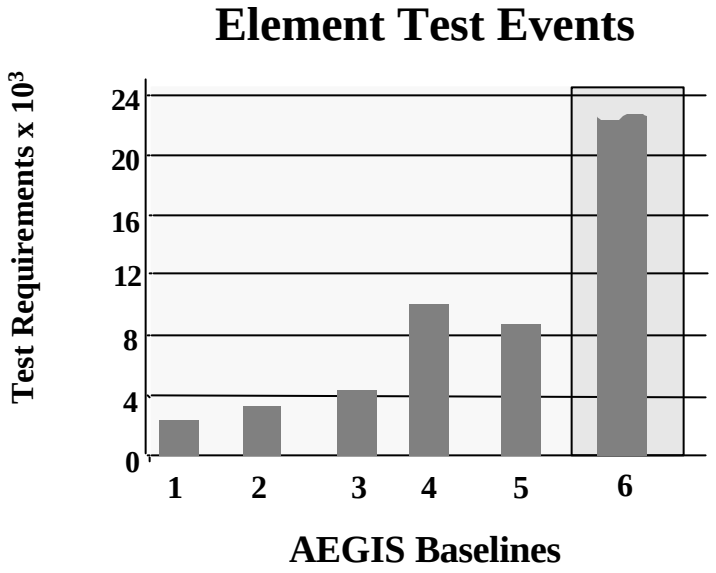


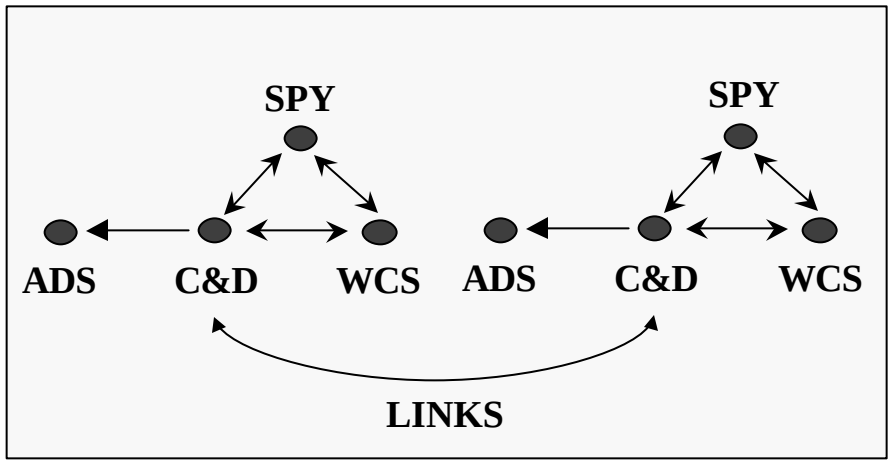
- **Inadequate Shore Based Testing**
- **Acquisition Paradigm Not Synchronized With Move Toward Integrated Battlegroups**
- **Inadequate Interoperability Design**

NEEDED TO PAUSE AND <u>RETHINK</u>…THIS *<u>IS</u>* ROCKET SCIENCE!

INCREASED COMPLEXITY = INCREASED SYSTEMS ENGINEERING







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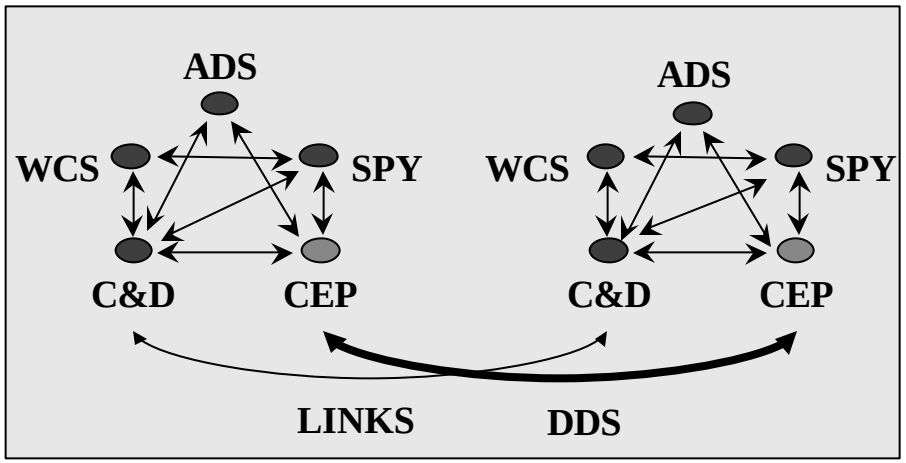
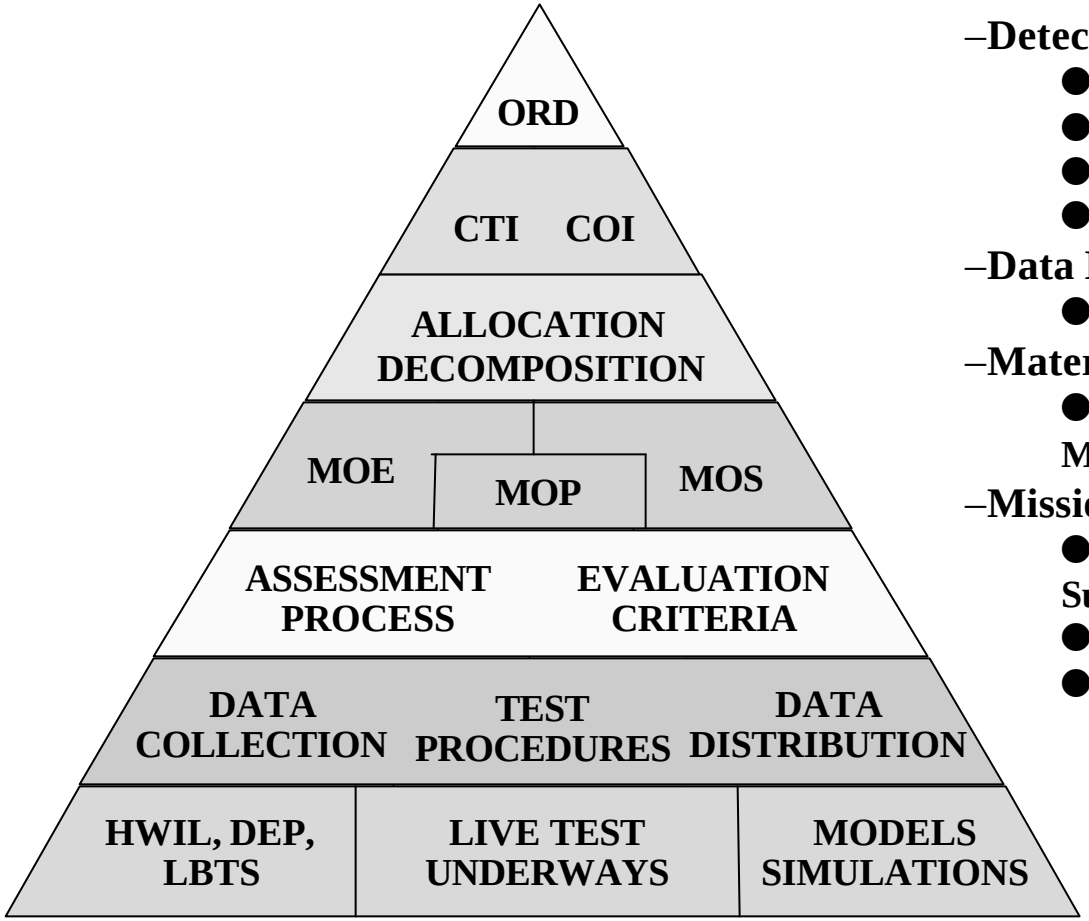


NOW

Analysis
- *Framework*-



The CTIs address performance in four areas:

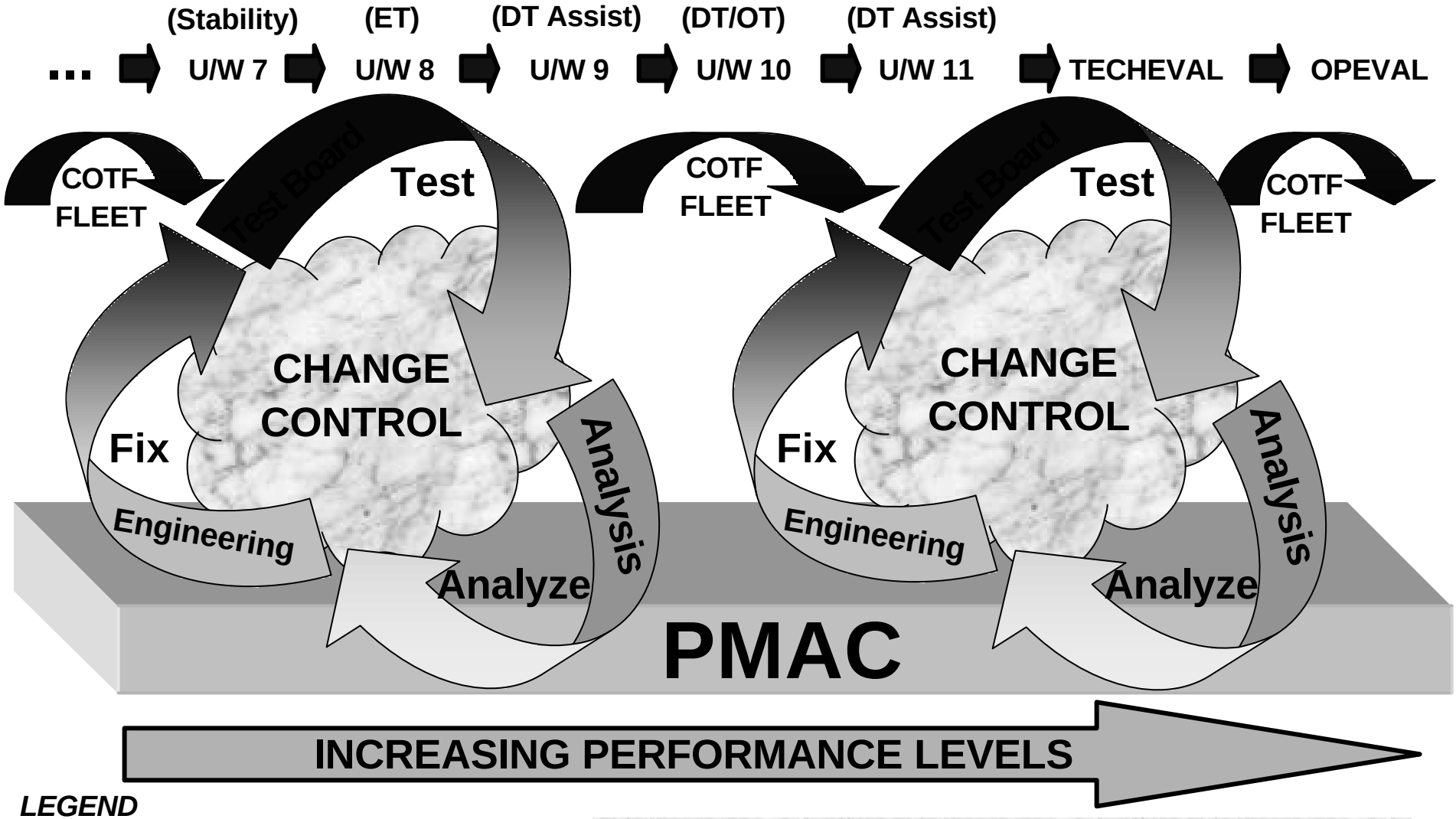
- **Detect-to-Engage:**
  - **CTI 1 – Depth of Fire**
  - **CTI 2 – Cooperative Engagement**
  - **CTI 3 – Identification**
  - **CTI 4 – Composite Tracking**
- **Data Distribution**
  - **CTI 5 – Data Distribution**
- **Material Readiness**
  - **CTI 6 – Reliability, Availability, and Maintainability**
- **Mission Information Management**
  - **CTI 7 – Distributed Air Defense System Support**
  - **CTI 8 – Common Tactical Picture Support**
  - **CTI 9 – Force Interoperability**

Derived from CEC ORD Requirements

Derived from CEC ADM Requirements

CTIs provide the principal means for the assessment of CEC ORD and ASN RD&A ADM requirements.

Interoperability Task Force: Test - Analyze/Assess - Fix

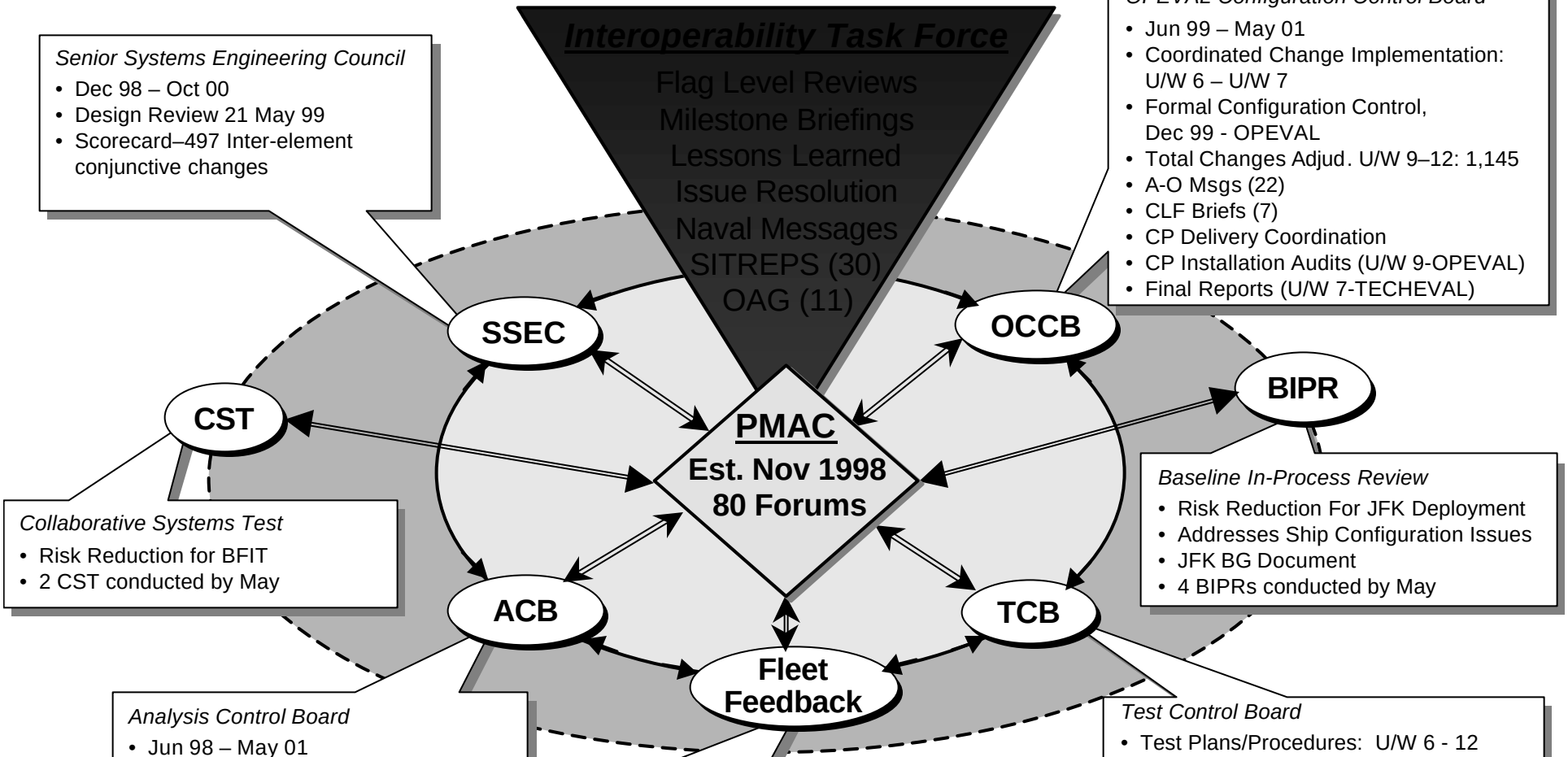


LEGEND

PMAC - Program Managers Advisory Council
COTF - Commander Operational Test & Evaluation Force

Test - Analyze/Assess - Fix

ROAD TO CEC OPEVAL ACQUISITION CONSIDERATIONS "THE WHAT"



Senior Systems Engineering Council
- Dec 98 – Oct 00
- Design Review 21 May 99
- Scorecard–497 Inter-element conjunctive changes

OPEVAL Configuration Control Board
- Jun 99 – May 01
- Coordinated Change Implementation: U/W 6 – U/W 7
- Formal Configuration Control, Dec 99 - OPEVAL
- Total Changes Adjud. U/W 9–12: 1,145
- A-O Msgs (22)
- CLF Briefs (7)
- CP Delivery Coordination
- CP Installation Audits (U/W 9-OPEVAL)
- Final Reports (U/W 7-TECHEVAL)

Collaborative Systems Test
- Risk Reduction for BFIT
- 2 CST conducted by May

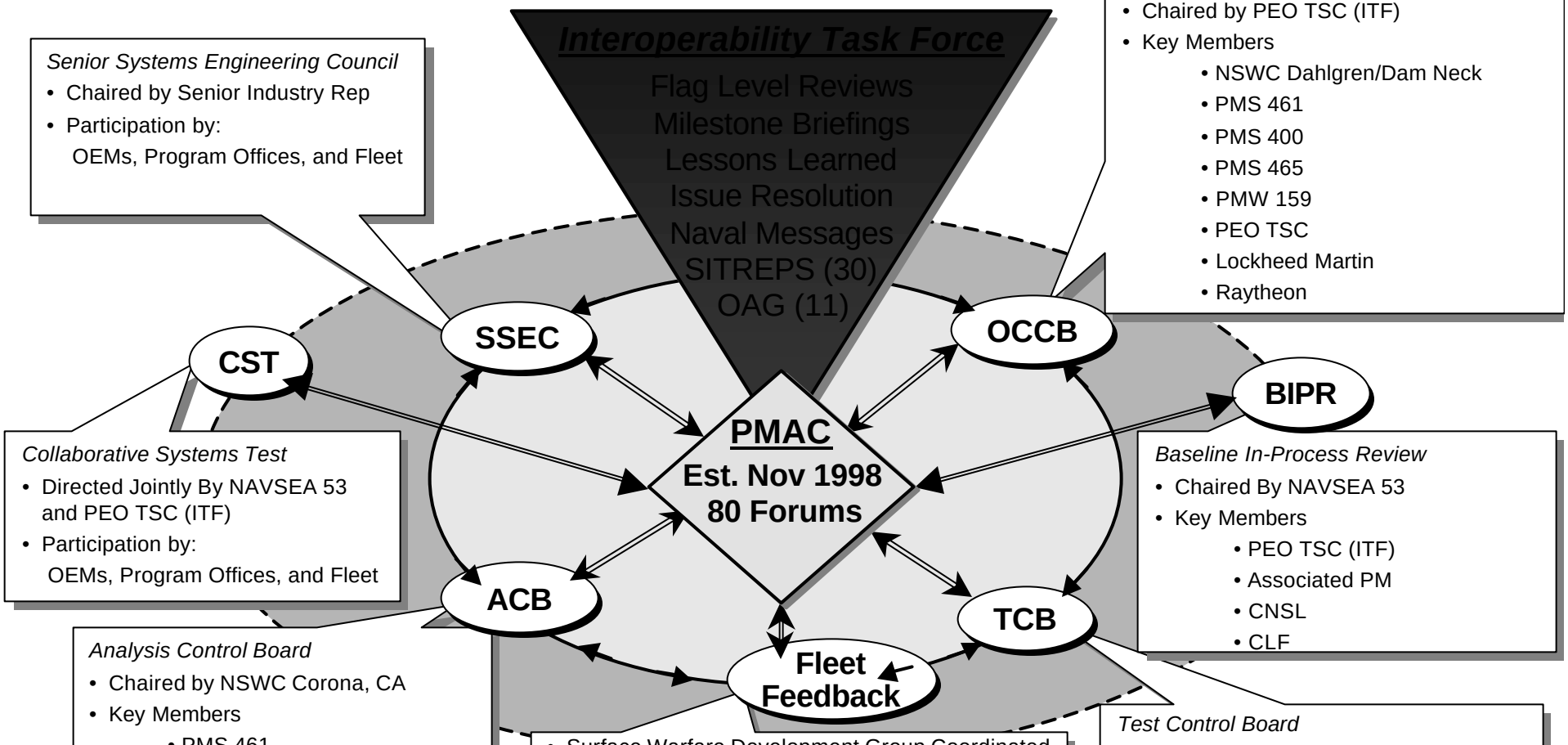
Baseline In-Process Review
- Risk Reduction For JFK Deployment
- Addresses Ship Configuration Issues
- JFK BG Document
- 4 BIPRs conducted by May

Analysis Control Board
- Jun 98 – May 01
- DMAP
- Data Analysis Working Group (DAWG)
- ACB Reports U/W 7 - 12
- Daily ACB/OCCB TOR Adjudication
- Total ACB Issues:
- LIFT (9)
- **6 APR TECHEVAL Quicklook**

- SWDG TACMEMOs
- LINK Recommendations

Test Control Board
- Test Plans/Procedures: U/W 6 - 12
- Scenarios Working Group
- DT Reports
- NSWC PHD TOR Database (1662 TORs since UW 7)
- Jun 99 – Apr 01

ROAD TO CEC OPEVAL ACQUISITION CONSIDERATIONS "THE WHO"



Senior Systems Engineering Council
- Chaired by Senior Industry Rep
- Participation by:
  OEMs, Program Offices, and Fleet

OPEVAL Configuration Control Board
- Chaired by PEO TSC (ITF)
- Key Members
  - NSWC Dahlgren/Dam Neck
  - PMS 461
  - PMS 400
  - PMS 465
  - PMW 159
  - PEO TSC
  - Lockheed Martin
  - Raytheon

Collaborative Systems Test
- Directed Jointly By NAVSEA 53 and PEO TSC (ITF)
- Participation by:
  OEMs, Program Offices, and Fleet

Baseline In-Process Review
- Chaired By NAVSEA 53
- Key Members
  - PEO TSC (ITF)
  - Associated PM
  - CNSL
  - CLF

Analysis Control Board
- Chaired by NSWC Corona, CA
- Key Members
  - PMS 461
  - PMS 400
  - PMS 465
  - PMW 159
  - PEO TSC
  - Lockheed Martin
  - Raytheon

- Surface Warfare Development Group Coordinated
- Key Inputs
  - NSWC Dahlgren
  - NSWC PHD
  - PEO TSC
  - Fleet
  - ATRC

Test Control Board
- Chaired by NSWC PHD
- Key Members
  - PEO TSC (ITF)
  - Associated PM
  - Associated Ranges
  - Fleet

WHAT BROUGHT US HERE
"OUR SCORECARD"

Legacy Systems

- Transition to COTS
- Object Oriented Modular System Designs
- Long Term Issue

Overaggressive Schedules

- Rescheduled CEC OPEVAL
- Decompressed Overall Development Schedules

Size and Complexity

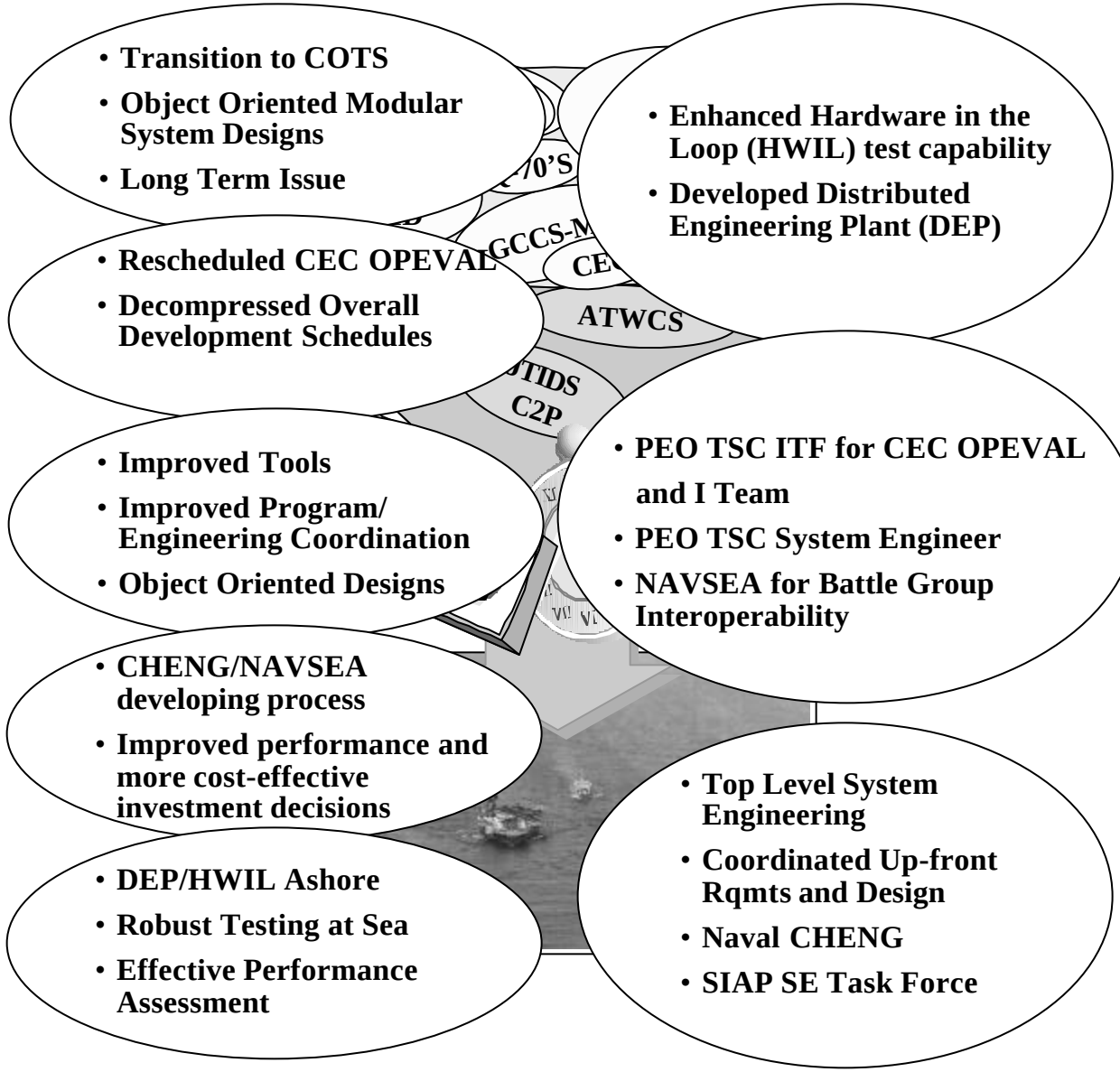
- Improved Tools
- Improved Program/ Engineering Coordination
- Object Oriented Designs

Lack of Force Level System Engineering Process

- CHENG/NAVSEA developing process
- Improved performance and more cost-effective investment decisions

Lack of Force Level Performance Validation

- DEP/HWIL Ashore
- Robust Testing at Sea
- Effective Performance Assessment



Inadequate Shore Based Test Environment

- Enhanced Hardware in the Loop (HWIL) test capability
- Developed Distributed Engineering Plant (DEP)

Acquisition Paradigm Not Synchronized With Move Toward Integrated Battlegroups

- PEO TSC ITF for CEC OPEVAL and I Team
- PEO TSC System Engineer
- NAVSEA for Battle Group Interoperability

Inadequate Interoperability Design

- Top Level System Engineering
- Coordinated Up-front Rqmts and Design
- Naval CHENG
- SIAP SE Task Force

RIGHT DIRECTION…A LONG WAY TO GO

In Summary ……

- Solutions to "Interoperability" in the Acquisition Process must account for the continuous increase of the complexity of our systems
- Engineering of interoperable systems requires rigorous pursuit of analysis…the Acquisition Process must fully support an executable analysis framework
  - Absolutely necessary…probably not sufficient
- Acquisition Processes must evolve to account for the Interdependency of Programs
- Acquisition Processes must support fixing problem….not just identifying them
- Finally…the Acquisition Process has to account for the attraction and motivation of talented people. This is (and will remain) for the immediate future resource and labor intensive.
  - Consistent resource sponsorship is fundamental to progress